

TRIGONOMETRY

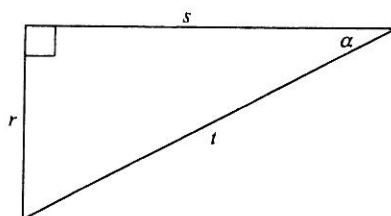
These questions will test your knowledge of operations involving trigonometry, including the relationships in right angles; the definitions of trigonometric functions; graphing trigonometric functions; using trigonometric identities; and solving trigonometric equations. Since trigonometry is seen by the ACT as "higher math," these practice questions are categorized as either medium or hard only; they make up a very small percentage (about 7 percent) of the ACT Mathematics Test, and will usually only appear in the latter half of the questions on your ACT Mathematics Test.

Difficulty Level: Medium

1. The sides of a right triangle measure 5 in, 12 in, and 13 in. What is the cosine of the acute angle adjacent to the side that measures 12 in ?

- A. $\frac{5}{12}$
- B. $\frac{5}{13}$
- C. $\frac{12}{13}$
- D. $\frac{13}{12}$
- E. $\frac{12}{5}$

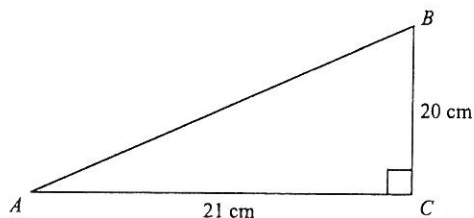
2. In the right triangle pictured below, r , s , and t are the lengths of its sides. What is the value of $\tan \alpha$?



- F. $\frac{r}{t}$
- G. $\frac{s}{t}$
- H. $\frac{t}{r}$
- J. $\frac{r}{s}$
- K. $\frac{t}{s}$

- A. $\frac{3}{5}$
- B. $\frac{3}{4}$
- C. $\frac{4}{5}$
- D. $\frac{4}{3}$
- E. $\frac{5}{4}$

4. In the right triangle shown below, $\cos \angle A = ?$



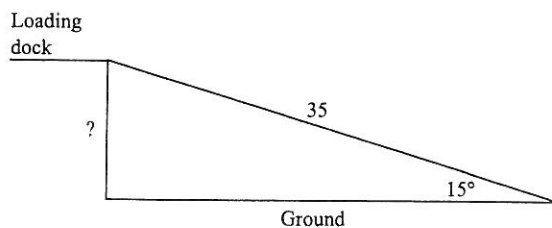
- F. $\frac{20}{21}$
- G. $\frac{20}{29}$
- H. $\frac{21}{29}$
- J. $\frac{29}{21}$
- K. $\frac{21}{20}$

Difficulty Level: Hard

5. For values of x where $\sin x$, $\cos x$, and $\tan x$ are all defined,
 $\frac{(\cos x)}{(\tan x \sin x)} = ?$

- A. $\frac{\cos^2 x}{\sin^2 x}$
- B. $\tan^2 x$
- C. 1
- D. $\sin^2 x$
- E. $\sec x$

6. As shown in the figure below, a ramp leading from a loading dock is 35 feet long and forms a 15° angle with level ground.



Given the trigonometric approximations in the table below, what is the height above ground of the loading dock, to the nearest 0.1 foot?

$\cos 15^\circ$	0.966
$\tan 15^\circ$	0.268
$\sin 15^\circ$	0.259

- F. 9.4 J. 7.4
- G. 9.1 K. 2.8
- H. 7.7

- $\sin \alpha$
- A. $\cos \alpha$
 - B. $\frac{1}{\cos \alpha}$
 - C. $\frac{1}{\sin \alpha}$
 - D. $\frac{1}{\sin^2 \alpha}$
 - E. $\frac{\cos \alpha}{\sin \alpha}$